Program and Abstracts

High Country Lepidopterists
20th Annual Meeting
October 23 and 24, 2009
Denver Museum of Nature & Science

ed. by Frank-T. Krell
High Country Lepidopterists
20th Annual Meeting
Friday and Saturday, October 23 and 24, 2009

Denver Museum of Nature & Science
2001 Colorado Boulevard (Colorado and Montview)
City Park, Denver, CO 80205

Program

Friday, October 23

from 6:00 PM Potluck dinner at the home of Frank Krell, 552 S Deframe Ct, Lakewood, CO 80228 (Green Mountain Estates); 39°42'25"N, 105°9'16"W.
Home phone: 303 279-3424

Saturday, October 24

9:00 -12:00 Open House in the DMNS Entomology Collection
12:00 - 1:30 Lunch, food provided in the El Pomar Space Education Center (SEC; our meeting room)
1:00 – 1:30 Book signing by Paul Opler and Mike Fisher (SEC)

1:30 – 4:30 Talks (SEC)
1:30 – 1:40 Frank Krell: Welcome and introduction
1:40 – 2:00 Paul Opler: Moths of Western North America – the book
2:00 – 2:20 Todd Gilligan: Light brown apple moth (Epiphyas postvittana) in California: history, biology, and identification
2:20 – 2:35 Chuck Harp: Schinia zuni (McElvare, 1950), rediscovered after 60 years
2:35 – 2:55 Boyce Drummond: Effects of fire prevention treatment in ponderosa pine forests on the Pawnee montane skipper butterfly (Hesperia leonardus montana)

2:55 – 3:10 Coffee break
3:10 – 3:30 Janet Chu: This was an unusual butterfly season – aren't they all?
3:30 – 3:50 Carolina Quintero: Does mama know best? Butterfly oviposition choice and caterpillar performance depends on host-plant age
3:50 – 4:10 Samuel Johnson: Retrospective studies from journal data: the case of Bear Creek butterfly abundances
4:10 – 4:30 Frank Krell: The Colorado Scarab Survey – how lepidopterists can help
4:30 – 5:00 Business meeting (SEC)
Evening Dinner at a local restaurant (tbd)
20 Years High Country Lepidopterists' Meetings

1990: 1st meeting (High Plains Lepidopterists), September 14-15, Holiday Inn University Park, hosted by Colorado State University, Entomology Department, Fort Collins

1991: 2nd meeting (High Plains Lepidopterists), October 4-5, University of Colorado Museum, Boulder

1992: 3rd meeting, September 11-12, Denver Museum of Natural History, Denver

1993: 4th meeting, September 18, University of Wyoming, Department of Entomology Insect Collection, Laramie

1994: 5th meeting, October 28-29, Holiday Inn University Park, hosted by C.P. Gillette Museum of Arthropod Diversity Colorado State University, Fort Collins

1995: 6th meeting, October 20-22, University of Colorado Museum, Boulder

1996: 7th meeting, October 25-26, Butterfly Pavilion, Westminster

1997: 8th meeting, September 19-20, Holiday Inn University Park, Fort Collins

1998: 9th meeting, October 23-24, University of Colorado Museum, Boulder

1999: 10th meeting, October 22-23, C.P. Gillette Museum, Colorado State University, Fort Collins

2000: 11th meeting, November 3-4, C.P. Gillette Museum, Colorado State University, Fort Collins

2001: 12th meeting, September 7-8, C.P. Gillette Museum, Colorado State University, Fort Collins

2002: 13th meeting, October 11-12, University of Colorado Museum, Boulder

2003: 14th meeting, November 7-8, C.P. Gillette Museum, Colorado State University, Fort Collins

2004: 15th meeting, November 5-6, University of Colorado Museum, Boulder

2005: 16th meeting, October 21-22, C.P. Gillette Museum, Colorado State University, Fort Collins

2006: 17th meeting, October 27-28, University of Colorado Museum, Boulder

2007: 18th meeting, November 2-3, C.P. Gillette Museum, Colorado State University, Fort Collins

2008: 19th meeting, October 24-25, University of Colorado Museum, Boulder


A great thank you for digging out all these data to Evi Buckner-Opler, Paul Opler, Mike Wiseman, and Boyce Drummond.

Abstracts

Janet Chu

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This was an unusual butterfly season – aren't they all?

Butterfly inventories continued in 2009, which were begun by this team in 2005. Ten Boulder County Parks and Open Space (BCPOS) and two Boulder City Open Space Mountain Parks (OSMP) lands were sites for this study. The numbers of species of butterflies diminished in 2009 as well as the overall populations. Much of this decline was due to cloudy, cold and drizzly weather which discouraged researchers and reduced the number of field days.

Ten Boulder County Open Space properties were visited during 40 days and this team recorded 87.5 research hours in the field. In August 2009, we explored OSMP properties four days including about 11.5 research hours.

While conducting our research on these lands in 2007, we observed seven Rio Grande River - Mexican butterfly species not normally found in our area, and an average of 39 individuals per research hour on seven sites. In 2008 the average number of individuals on the same seven research sites was 46; and in 2009 was 37.

Warm days returned in August so the team explored new areas finding two new county records Rita Blue *Euphilotes rita* and Texanus Blue *Plebejus texanus*. Also Christian Nunes, OSMP, added Two-spotted Skipper *Euphyes bimaculata* raising the records of proven sightings from 198 to 201 species for Boulder County.

More detailed studies of natural resources are being provided by these and other lepidopterists, to help with ongoing efforts to identify local effects of regional and global climate change and to provide additional information regarding this phenomenon.
Boyce Drummond

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Effects of fire prevention treatment in ponderosa pine forests on the Pawnee montane skipper butterfly (Hesperia leonardus montana)

The Pawnee montane skipper (Hesperia leonardus montana) was listed by the USFWS as Threatened in 1987, after surveys determined that its known habitat is limited to less than 40 square miles along the South Platte River southwest of Denver, Colorado. Found only in ponderosa pine savanna growing on steep slopes of Pikes Peak Granite, skipper populations have been decimated by catastrophic fire and severe drought over the past two decades. Annual monitoring since 2000 has shown that population densities of this species fluctuated nearly 20-fold during this period, and are positively correlated with flowering stem densities of prairie gayfeather (Liatris punctata), an important nectar source and aggregation site. Recent forest management efforts in the area that attempt to restore pre-settlement conditions to reduce risk of catastrophic fire have improved skipper habitat by encouraging growth and reproduction of prairie gayfeather.

Todd M. Gilligan

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Light brown apple moth (Epiphyas postvittana) in California: history, biology, and identification

The light brown apple moth (LBAM), Epiphyas postvittana (Walker), was discovered in California in 2006. Native to Australia, his highly polyphagous species has been recorded feeding on more than 500 plant species in 363 genera and 121 families. Various attempts to eradicate or control the spread of LBAM have been met with severe public opposition, and over 152,000 individual LBAM from 18 California counties have been confirmed as of August, 2009. I outline the history of LBAM establishment in California, its biology, identification challenges, and recently developed identification tools. I also discuss the future of LBAM in California and the social and political problems created by its presence.
Charles E. Harp

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_Schinia zuni_ (McElvare, 1950), rediscovered after 60 years

Known from only 6 specimens taken from 1948 to 1951, _Schinia zuni_ has remained one of the least known members of the heliothine moths. This report updates new collection localities and a potential host plant for the moth.

Samuel A. Johnson

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Retrospective studies from journal data: the case of Bear Creek butterfly abundances

A life-long field journal is mined for data to determine relative butterfly abundances in two-week intervals across the spring and summer seasons in Bear Creek, El Paso County, Colorado. Surprises include the incomparable abundance of _Celastrina argiolus_, and the greater than anticipated frequency of species sometimes considered rare in the area, such as _Atrytonopsis hianna, Stinga morrisoni_, and _Phyciodes pallida_. Flight periods of most species can be easily determined using these data. The same journal records are applied to attempt a diagnosis of the effects of the 2001-2004 drought on emergence times. In addition, community similarity indices such as the Jaccard Index and the Percent Similarity Index are used to assess biodiversity, a novel use of these indices, and the results are shown to be generally comparable to Clench's logistic equation.
Frank-T. Krell

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**The Colorado Scarab Survey – how lepidopterists can help**

With about 35,000 species, scarab beetles (Coleoptera: Scarabaeoidea) are one of the major beetle superfamilies. Whereas some other states in the region, such as Nebraska or North Dakota, have monographic accounts of their scarab beetle fauna (Helgesen & Post 1967, Lago et al. 1979, Ratcliffe & Paulsen 2008), Colorado is more than a century behind. The last catalogue of Colorado beetles was published in 1902 (Wickham 1902). 196 species have been recorded for the State in the literature, but only 7.8 species on average were recorded per county. Two years ago, we have started a statewide collecting program of scarab beetles in Colorado, the Colorado Scarab Survey. Aim of the Survey is to produce a monograph of Colorado scarabs with keys, illustrations and distribution maps for all species and a regularly updated webpage. With the Survey still in its infancy, every single record, even of common scarab species, is valuable and appreciated. Lepidopterists are practicing one of the most efficient collecting methods for scarab beetles: light trapping. Since scarab beetles tend to fly earlier in the evening than moths, the light should be started at the beginning of dusk. Beetle collectors are generally less enduring at the light and stop the light trap about an hour after darkness, missing late flying species which are, therefore, often considered rare. Thus, lepidopterists are an invaluable resource for any beetle survey.

**References**

Moths of Western North America – the book

A description of the background, rationale, and contents of the new Powell and Opler (2009) book on western moths. This book, patterned after Moths of Australia by Ian Common (1990), is the first book published on this subject. The book emphasizes biology and natural history and is not intended as a field guide. About 2200 species are discussed and illustrated. Where known, for each species, geographic occurrence, flight dates, larval host plants, larval description, and other relevant information is presented. An appendix on collecting and observation techniques is included. Acknowledgments are given to major contributors of assistance and information.

References

Does mama know best? Butterfly oviposition choice and caterpillar performance depends on host-plant age

Plant ontogeny has been shown to affect the expression of numerous plant traits relevant to herbivores such as nutritional content as well as physical and chemical defenses. However, we know little about how these plant traits changes across multiple developmental stages of a plant species or how herbivore species respond to those changes. In order to evaluate how oviposition preferences and caterpillar performance vary among multiple developmental stage of the same host plant, Buckeye butterflies (Junonia coenia Hübner, Nymphalidae) were exposed to greenhouse Plantago lanceolata L. (Plantaginaceae) plants of five distinct ontogenetic stages. Two choice tests were
performed: 6 vs. 8 vs. 10 weeks-old plants and 10 vs. 14 vs. 18 weeks-old plants. After 72 hrs, I recorded the number of eggs on each of the three plants. To evaluate caterpillar performance, one newly-hatched larva was placed on each of 20 plants per ontogenetic stage using four of the stages offered to butterflies: 6, 10, 14 and 18 weeks-old plants. Larvae were monitored and weighed every five days from 2\textsuperscript{nd} instar to pupation, and survival rate, growth rate, and developmental time determined.

Plant age significantly influenced both butterfly oviposition choice and caterpillar performance. Buckeye butterflies greatly prefer young developmental stages of \textit{P. lanceolata}. In accordance with the “mother knows best” hypothesis, caterpillars also performed better on young developmental stages of \textit{P. lanceolata}. Mortality rate reached 80\% on reproductive and post reproductive stages while mortality decreased to 55 and 5\% in juvenile and seedling stages, respectively. In addition, surviving caterpillars developed significantly faster and reached higher pupa weights on seedlings, decreasing performance as host plants aged. These results demonstrate that changes in plant traits throughout plant development can greatly influence insect herbivores by directly altering herbivore preference and performance.